Trend Study 29-1-98

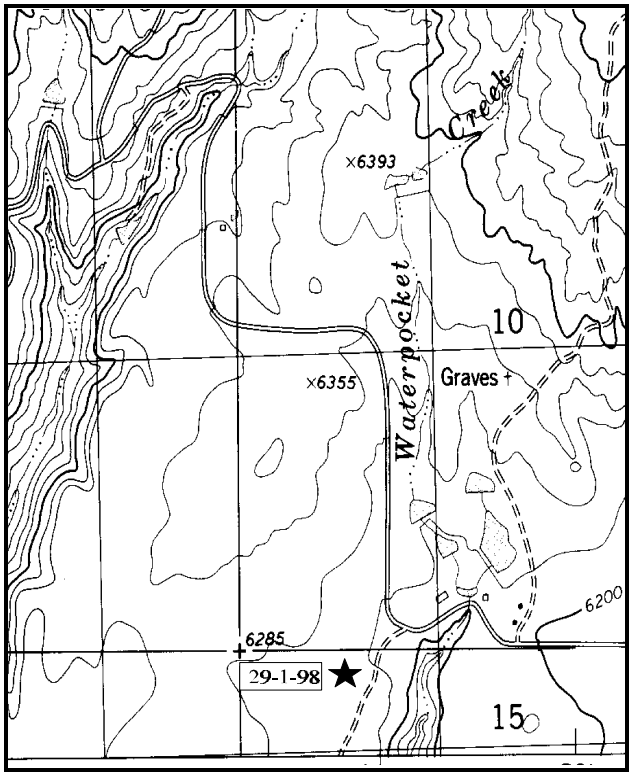
Study site name: Wilson Ranch . Range type: Big Sagebrush .

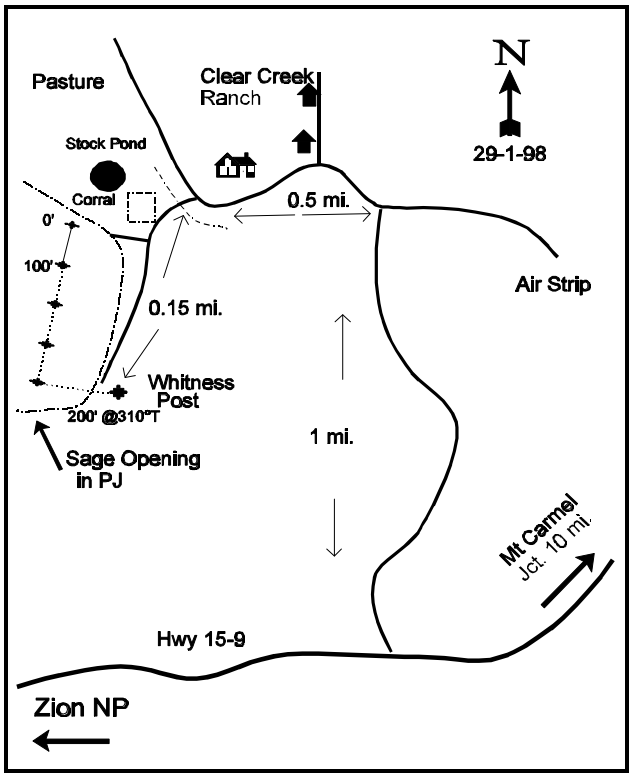
Compass bearing: frequency baseline 180 degrees.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 71ft), line 2 (34ft), line 3 (59ft), line 4 (95ft).

LOCATION DESCRIPTION

From Mt. Carmel Junction, travel west on SR-9 for about 10.8 miles to a road going towards the Clear Creek Ranch and Zion Narrows. Go 1.0 mile north on this road to an intersection by the airstrip. Turn left, go past the Clear Creek Ranch houses and barn for 0.5 miles to where the main road curves to the right around the ranch - take a small fork to the left here. Go through a gate and to a corral. Bear left into the P-J at a fork just past the corral, go 0.15 miles and stop by a witness post. Walk northwest about 200 feet into the P-J to a sagebrush opening and the end of the baseline. The 0-foot stake is 400 feet north, and the 2' fencepost is marked by browse tag #7159.





Map Name: Clear Creek Mountain Diagrammatic Sketch

Township 41S , Range 9W , Section 15 UTM 4124150.795 N, 336644.852 E

DISCUSSION

Trend Study No. 29-1

The Wilson Ranch trend study samples an area of deer winter range located on the Kolob Terrace. The land was part of the privately owned Wilson Ranch. Ownership appears to have changed since 1987. During the 1992 reading, the ranch was called the Cedar Creek Ranch, and in 1998 it was called the Clear Creek Ranch. The study samples a small opening of Wyoming big sagebrush surrounded by pinyon-juniper with scattered oak clones. It has a slight northern aspect with a gentle slope of approximately 2% and an elevation of 6,200 feet. Cattle grazing, which occurred during the 1987 reading, appeared to have been discontinued in 1992. However, cattle use was noted again in 1998. Pellet group data from 1998 estimate light cattle use at 11 days use/acre. Deer use appears to be very high with an estimated 111 days use/acre. Most of the deer pellet groups were several months old, but some fresh tracks were found on the site. Pellet groups appeared to be concentrated in the sagebrush clearing, with dramatically less frequent sign outside the sagebrush opening. About 1/4 of a mile to the east are irrigated hay fields, which deer may be using during the summer. Quadrat frequency of deer pellet groups have increased since 1992, indicating a higher level of use.

Soil on the site is relatively shallow with an effective rooting depth (see methods) estimated at 15 inches. At that depth, the soil becomes very compacted and there may be a hardpan, or some kind of other restrictive layer present. Texture is a sandy loam with a neutral pH (6.8). Rock and pavement are not common on the surface or within the soil profile. The red, sandy loam soil is highly erodible. Rills are common across the site, leading to small gullies in the pinyon-juniper north of the baseline. The effects of erosion are minimized by the levelness of the terrain.

The dominant shrub in the opening is Wyoming big sagebrush which had an estimated density of 2,466 plants/acre in 1987. The age structure of the population at that time appeared stable, with 57% of the plants classified as mature, 24% decadent, and 19% young. Seedlings numbered 333/acre. Forty-six percent of the sagebrush were heavily hedged. Wyoming big sagebrush density increased to an estimated 9,820 plants/acre by 1992. Some of this increase is due to the much larger sample size taken during that year, but the population definitely increased with large numbers of young plants sampled at that time (5,340 plants/acre). Percent decadency remained similar, while the proportion of shrubs displaying heavy hedging declined to 9%. Density declined 59% by 1998 from 9,820 to 4,060 plants/acre. This decline is mostly due to a decline in density of young plants (5,340 to 720 plants/acre). Dead plants, first included in the 1998 surveys, were abundant with 33% of the decadent plants classified as dying. Utilization is similar to 1992 levels, but with more moderate use. Percent decadency has increased slightly from 21% in 1992 to 34% by 1998. Young plants are still common and represent 18% of the population.

Other important browse species on the site consist of Utah serviceberry, black sagebrush, and small numbers of squaw-apple. Black sagebrush displayed extremely heavy use in 1987, but more moderate use in 1992 and 1998. The small population of squaw-apple was all heavily hedged in 1987 and 1998. It likely receives dual use from cows and deer.

Broom snakeweed was the most numerous shrub on the site with an estimated density of 2,933 plants/acre in 1987, increasing to 13,080 by 1992. Density declined to 8,680 plants/acre by 1998. Biotic potential is still high at 17%. The proportion of young plants has increased from 18% in 1987 to 34% in 1998. Pinyon and juniper trees are encroaching into the clearing. Point quarter data from 1998 estimate 32 Utah juniper and 29 pinyon pine trees/acre. Average basal diameter is 6.7 inches for juniper and 3.6 inches for pinyon.

The herbaceous understory is poor and lacking perennial species. Annual cheatgrass dominates the understory. It provided 32% of the grass cover in 1992, increasing to 69% by 1998. Cheatgrass cover also increased from 1% to 9% during the same period. The second most abundant grass is another annual, sixweeks fescue. Four species of perennial grass include the following: Indian ricegrass, mutton bluegrass,

sand dropseed, and bottlebrush squirreltail are found on the site, yet none provide more than 1% cover. Most of the grass is found in the protection of shrubs. Forbs are diverse, although they provide very little forage. The most common species is the annual bur buttercup.

1987 APPARENT TREND ASSESSMENT

Over half of the ground surface is exposed soil due to the lack of vegetation cover between the individual sagebrush. There are a few patches of cryptogams. Litter cover is estimated at 43%, making a total ground cover of 47%. A healthy population of Wyoming big sagebrush represents the key browse species for this site. Age class analysis indicates a stable population. Less abundant shrubs consisting of squaw-apple and bitterbrush are heavily hedged. Broom snakeweed is the most numerous browse which appears to be increasing. Herbaceous species are fairly diverse, yet not very abundant.

1992 TREND ASSESSMENT

Most of the herbaceous vegetation occurs under shrub and tree canopies leaving the interspaces prone to erosion. Bare ground estimates have declined slightly from 53% to 43%, but litter cover also declined from 43% to 31%. Trend is considered stable, although it is in very poor condition. Trend for browse is considered up with increased densities of Wyoming big sagebrush. Utilization is lighter and reproduction improved. Herbaceous plants, growing mostly under the shrub and tree canopies, are diverse and not abundant, producing little usable forage. Sum nested frequencies for perennial grasses remained stable, while those for forbs increased, indicating a slightly upward trend.

TREND ASSESSMENT
soil - stable, but in very poor condition
browse - up
herbaceous understory - up slightly

1998 TREND ASSESSMENT

Trend for soil appears stable with similar amounts of bare ground compared to 1992. Conditions are still poor however. Trend is down for the key species, Wyoming big sagebrush. Density has declined by 59%, use is heavier, percent decadence has increased from 21% to 34%, and a larger proportion of decadent plants appear to be dying. Trend for the herbaceous understory is stable for perennial grasses, but down significantly for forbs, although forbs make up 19% of the herbaceous understory cover. The annual, cheatgrass, has increased significantly in nested frequency since 1992. It currently provides 69% of the grass cover and 55% of the total herbaceous cover. Another annual, sixweeks fescue, has also increased significantly in nested frequency and is now the second most abundant grass on the site providing an additional 13% of the grass cover. Perennial grasses are scarce and found growing exclusively under the protection of shrubs. Forbs are very diverse but annuals dominate the composition. Overall, trend is considered down and in poor condition.

TREND ASSESSMENT
soil - stable, but in very poor condition
browse - down
herbaceous understory - down and dominated by annuals

HERBACEOUS TRENDS --
Herd unit 29 , Study no: 1

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'92	'98	'87	'92	'98	'92	'98
G	Bromus tectorum (a)	-	a98	b253	-	40	83	1.02	9.04
G	Oryzopsis hymenoides	17	30	33	9	15	16	.54	.63
G	Poa fendleriana	29	33	25	12	15	12	.47	.69
G	Sitanion hystrix	b75	a41	ab46	31	18	26	.53	.38
G	Sporobolus cryptandrus	21	40	35	10	19	17	.53	.74
G	Stipa comata	-	-	2	-	-	1	-	.00
G	Vulpia octoflora (a)	-	a17	b72	-	8	28	.06	1.68
Total for Annual Grasses		0	115	325	0	48	111	1.09	10.73
Total for Perennial Grasses		142	144	141	62	67	72	2.09	2.46
Total for Grasses		142	259	466	62	115	183	3.18	13.19
F	Antennaria rosea	-	-	1	-	-	1	-	.03
F	Arabis spp.	a-	b7	b9	-	5	5	.02	.07
F	Astragulus piutensis	3	-	-	2	-	-	-	-
F	Calochortus nuttallii	a-	b12	ab3	-	5	1	.02	.01
F	Chenopodium spp. (a)	-	b6	a-	-	4	-	.02	-
F	Cymopterus spp.	-	3	-	-	1	-	.00	-
F	Dalea searlsiae	2	-	1	2	-	1	.04	.03
F	Draba spp. (a)	-	a-	b20	-	-	10	-	.05
F	Epilobium brachycarpum (a)	-	27	23	-	10	9	.10	.04
F	Erigeron divergens	59	62	66	28	25	31	.22	.65
F	Ipomopsis aggregata	4	-	-	2	-	-	-	-
F	Lomatium spp.	-	2	1	-	1	1	.00	.03
F	Lotus utahensis	-	-	4	-	-	2	-	.03
F	Lupinus argenteus	-	-	3	-	-	1	-	.03
F	Microsteris gracilis (a)	-	b146	a73	-	58	33	.36	.36
F	Orobanche corymbosa	-	4	-	-	2	-	.01	-
F	Penstemon linarioides	b11	a-	a-	6	-	-	-	-
F	Phlox longifolia	a-	ab7	b7	-	3	4	.02	.02
F	Polygonum douglasii (a)	-	b135	a52	-	57	22	.43	.18
F	Portulaca oleracea	4	-	-	2	-	-	-	-
F	Ranunculus testiculatus (a)	-	a65	b159	-	25	55	.20	1.44
F	Sanguisorba minor	-	-	3	-	-	1	-	.03
F	Senecio multilobatus	-	3	2	-	1	2	.00	.01
F	Sphaeralcea parvifolia	1	10	3	1	6	2	.13	.01
F	Tragopogon dubius	-	-	1	-	-	1	-	.03
F	Trifolium spp.	-	2	5	-	1	2	.00	.03
F	Verbena bracteata	-	-	-	-	-	-	.00	-
F	Viguiera multiflora	-	3	3	-	1	1	.00	.00

Type	Species	Nested Frequency '87	Nested Frequency '92	Nested Frequency '98	Quadrat Frequency '87	Quadrat Frequency '92	Quadrat Frequency '98	Average Cover % '92	Average Cover % '98
Total for Annual Forbs		0	244	327	0	97	129	0.68	2.09
Total for Perennial Forbs		84	250	112	43	108	56	0.95	1.03
Total for Forbs		84	494	439	43	205	185	1.63	3.12

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 29 , Study no: 1

Type	Species	Strip Frequency '92	Strip Frequency '98	Average Cover % '92	Average Cover % '98
B	Amelanchier utahensis	6	5	3.70	4.19
B	Artemisia nova	14	4	.30	.00
B	Artemisia tridentata wyomingensis	82	73	13.49	7.36
B	Chrysothamnus depressus	1	0	-	-
B	Gutierrezia sarothrae	76	79	2.20	4.53
B	Juniperus osteosperma	5	4	5.99	7.11
B	Opuntia spp.	2	3	.00	.00
B	Peraphyllum ramosissimum	1	1	.00	.03
B	Pinus edulis	2	5	-	.03
B	Purshia tridentata	0	0	-	-
B	Quercus gambelii	2	2	.85	.78
B	Ribes cereum cereum	0	1	-	-
Total for Browse		191	177	26.55	24.06

CANOPY COVER --
Herd unit 29 , Study no: 1

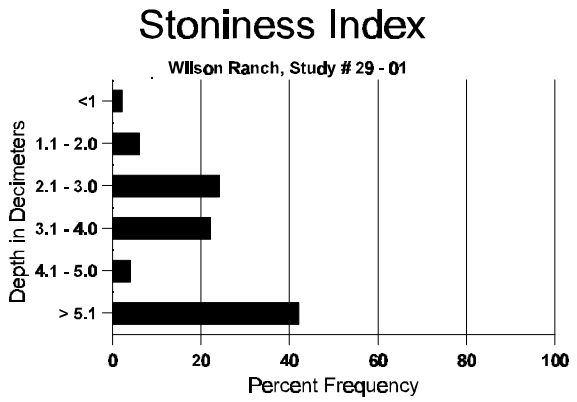
Species	Percent Cover '98
Juniperus osteosperma	11
Quercus gambelii	1

BASIC COVER --
Herd unit 29 , Study no: 1

Cover Type	Nested Frequency '92	Nested Frequency '98	Average Cover % '87	Average Cover % '92	Average Cover % '98
Vegetation	319	334	1.00	30.22	36.04
Rock	158	90	2.25	2.61	2.96
Pavement	35	174	0	.06	1.72
Litter	309	380	43.00	31.02	41.09
Cryptogams	79	72	.50	1.25	1.62
Bare Ground	297	298	53.25	43.19	44.02

SOIL ANALYSIS DATA --
Herd Unit 29, Study # 01, Study Name: Wilson Ranch

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
15.1	63.6 (15.1)	6.8	56.7	23.4	19.8	1.7	9.9	80.0	.4



PELLET GROUP FREQUENCY --
Herd unit 29 , Study no: 1

Type	Quadrat Frequency '92	'98
Rabbit	27	20
Deer	42	76
Cattle	-	3

BROWSE CHARACTERISTICS --
Herd unit 29 , Study no: 1

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	-	-	-	3	-	-	4	-	-	-	80			4
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	15	-	27	-	-	42	-	-	-	840			42
	98	5	-	-	9	-	-	-	-	-	14	-	-	-	280			14
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	1	-	-	3	-	4	-	-	8	-	-	-	160	-	-	8
	98	24	1	-	35	-	-	-	-	-	60	-	-	-	1200	80	72	60
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	1	1	-	-	-	-	-	2	-	-	-	40			2
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	37%	02%	00%	+30%
'98	01%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		0%
'92	1040			4%
'98	1480			0%

Artemisia nova																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	4	1	1	2	-	-	-	-	-	8	-	-	-	160			8
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	-	1	-	-	-	-	-	-	1	-	-	-	66	16	26	1
	92	3	7	1	-	-	-	-	-	-	11	-	-	-	220	-	-	11
	98	-	2	-	-	-	-	-	-	-	2	-	-	-	40	12	23	2
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	4	2	-	-	-	-	-	-	5	-	-	1	120			6
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	100%	00%	+87%
'92	48%	16%	04%	-76%
'98	33%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	66	Dec:		0%
'92	500			24%
'98	120			67%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata wyomingensis																		
S	87	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	92	34	-	-	6	-	-	5	-	-	45	-	-	-	900			45
	98	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
Y	87	5	2	-	-	-	-	-	-	-	7	-	-	-	466			7
	92	163	22	1	78	-	-	3	-	-	267	-	-	-	5340			267
	98	26	10	-	-	-	-	-	-	-	36	-	-	-	720			36
M	87	-	12	9	-	-	-	-	-	-	21	-	-	-	1400	18	28	21
	92	33	41	9	-	-	-	-	-	-	82	-	1	-	1660	-	-	83
	98	30	63	3	2	-	-	-	-	-	98	-	-	-	1960	15	24	98
D	87	-	1	8	-	-	-	-	-	-	8	-	-	1	600			9
	92	25	29	35	2	8	-	2	-	-	78	2	16	5	2020			101
	98	24	36	9	-	-	-	-	-	-	45	1	-	23	1380			69
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	1380			69

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	41%	46%	03%	+73%
'92	22%	10%	05%	-55%
'98	54%	06%	11%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	2466	Dec:	24%
	'92	9020		22%
	'98	4060		34%

Chrysothamnus depressus																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	-	1
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'92	20		-
	'98	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	87	21	-	-	-	-	-	-	-	-	21	-	-	-	1400			21
	92	739	-	-	15	-	-	-	-	-	754	-	-	-	15080			754
	98	91	-	-	-	-	-	-	-	-	91	-	-	-	1820			91
Y	87	8	-	-	-	-	-	-	-	-	8	-	-	-	533			8
	92	155	-	-	3	-	-	-	-	-	158	-	-	-	3160			158
	98	133	-	-	-	-	-	-	-	-	133	-	-	-	2660			133
M	87	36	-	-	-	-	-	-	-	-	36	-	-	-	2400	11	12	36
	92	460	-	-	7	-	-	-	-	-	467	-	-	-	9340	-	-	467
	98	300	-	-	-	-	-	-	-	-	300	-	-	-	6000	10	9	300
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	2	-	-	-	-	-	-	-	-	1	-	1	-	40			2
	98	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	+77%
'92	00%	00%	.15%	-31%
'98	00%	00%	.23%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	2933	Dec:		0%
'92	12540			0%
'98	8680			0%

Juniperus osteosperma																		
S	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	2	-	-	1	-	-	1	-	-	4	-	-	-	80			4
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	-	1	-	-	-	-	2	-	-	-	40			2
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	2	1	3	-	-	-	60	-	-	3
	98	-	-	-	-	-	-	2	1	-	3	-	-	-	60	-	-	3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	20%	20%	00%	-20%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'92	100			-
'98	80			-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	98	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20	-	-	1
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40	6	20	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	+33%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'92	40		-
	'98	60		-

Peraphyllum ramosissimum																		
M	87	-	-	1	-	-	-	-	-	-	1	-	-	-	66	35	71	1
	92	-	-	-	-	2	-	-	-	-	2	-	-	-	40	-	-	2
	98	-	-	2	-	-	-	-	-	-	2	-	-	-	40	53	63	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	100%	00%	-39%
'92	100%	00%	00%	+ 0%
'98	00%	100%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	66	Dec:	-
	'92	40		-
	'98	40		-

Pinus edulis																		
S	87	3	-	-	-	-	-	-	-	-	3	-	-	-	200			3
	92	-	-	-	1	1	-	1	-	-	3	-	-	-	60			3
	98	5	-	-	1	-	-	-	-	-	6	-	-	-	120			6
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	1	-	-	-	-	-	1	-	-	2	-	-	-	40			2
	98	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	+60%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'92	40		-
	'98	100		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Purshia tridentata																		
M	87	-	-	1	-	-	-	-	-	-	1	-	-	-	66	19	53	1
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0	28	47	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	100%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	66	Dec:	-
	'92	0		-
	'98	0		-

Quercus gambelii																		
S	87	9	-	-	-	-	-	-	-	-	9	-	-	-	600			9
	92	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
	98	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	87	5	-	-	-	-	-	-	-	-	5	-	-	-	333			5
	92	-	-	-	4	-	-	-	-	-	4	-	-	-	80			4
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	2	-	-	-	-	-	-	-	-	2	-	-	-	133	198	162	2
	92	1	3	-	-	-	-	-	-	-	4	-	-	-	80	-	-	4
	98	-	-	-	5	-	-	-	7	-	12	-	-	-	240	53	35	12
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	98	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	-66%
'92	38%	00%	00%	+33%
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	466	Dec:	-
	'92	160		-
	'98	240		-

Ribes cereum cereum																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	92	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	98	17	-	-	-	-	-	-	-	-	17	-	-	-	340	-	-	17

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	
'92	00%	00%	00%	
'98	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'92	0		-
	'98	340		-